Q-31

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Micro Technics Ltd.
Address 2000 Ellesmere, Unit 16, Toronto, Ontario
Telephone No. 438-6727
Name of Interviewee Fred Seymour
Position Director of Technical Marketing

1. Is work being done there on fibre measurement or identification?
   No _____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite

      Do not identify by type
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

Small amount of talc.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 95 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 60 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 50 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

Ministry of Labour for personal sampling pumps.

NIOSH for counting procedures.

3.1.2.1 What modifications have you made in these procedures?

Only in sampling procedures depending on requirements of the client.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes ____ No x

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes ____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x__ No ____

If yes, what sort of information and from whom?

Through literature, manufacturers' literature and associations, especially AIHA, ASTM.
American Federal Register is useful for standards and methods.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No _x__.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

NIOSH modified

3.1.3.1 What modifications have you made in these procedures?

In sampling procedures only.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x

If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

Same as 3.1.2.4, i.e. through scientific literature, manufacturers' literature and associations such as AIHA and ASTM.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No x

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/~~Day~~ Month: 100 - 200

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Clients: consultants in industrial hygiene or environment; occasionally an industrial firm.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 6 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Improve capability in thermogrametric analysis for talc and general analytical work.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling? ______________________

3.2.7.2 On test procedure? ______________________

3.2.7.3 On instrumentation? ______________________

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO

If yes, on what materials and under what circumstances?

Bulk - mostly talc, some insulation materials and other building materials.

6.1 What procedures do you use?

Thermogravimetric
Polarized light microscopy
Phase contrast

6.1.1 What modifications have you made in these procedures?

None

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Concord Scientific
Hatch Associates
(Chemsearch (Dr. P. Aurora) 368-7708
(727 King St. W. 368-5337
(Toronto
Bio Research Montreal
MDS Health Group, Toronto

8. What areas of research do you think deserve further work?

Development of a simple automatic method of counting fibres. One idea might be to disperse fibres in a liquid medium and pass through a particle reader programmed to measure only those particles having specified fibre characteristics.

Interviewer: ______________________ Date: ____________________

Q-32

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company United Technology Services Inc.
Address 75 Eglinton Avenue E. Toronto.
Telephone No. (416) 489-4111
Name of Interviewee Joe Suarez (Air and bulk analysis)
Position Manager, Environmental Engineering
Dr. Effio (Water and biological analysis)

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   - Chrysotile x
   - Amosite x
   - Crocidolite x
   - Anthophylite x
   - Tremolite x
   - Actinolite x

   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

Glass and some organic fibres from rugs.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air? (Joe Suarez)

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _80_%.

3.1 What percentage of your work on air measurements is service work as opposed to research? _80_%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _25_%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH

3.1.2.1 What modifications have you made in these procedures?

Flow rate may vary.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No x

If yes, please describe.

3.1.2.3 Have you imported any specialty instruments or attachments for use on air from the work place? Yes____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No

If yes, what sort of information and from whom?

Looking at British methods, U.S. methods.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes No x.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

NIOSH

3.1.3.1 What modifications have you made in these procedures?

Same as 3.1.2.1.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x___
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

Same as 3.1.2.4.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No x

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 10 air samples/month

3.1.4.2 Dollar Value: c. $1000/month

3.1.4.3 What is the source of funds for this work?

Small and medium-sized firms, but rarely manufacturers of asbestos products.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 1½ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To continue as we are doing.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes _x_. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

Trying different flow rates to see if counts are different.

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

Looking at different types of pumps and open-faced vs closed-faced filters.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: 3 weeks/year

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

Internally sponsored.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes ____ No x____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x____ No ____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Mostly what is in literature.

No actual exchange of information.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None.

3.2.5.2 On test procedures?

None.

3.2.5.3 On instrumentation?

None.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Six months.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

Comparison of British and NIOSH methods for efficiency in the field.

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water? (Dr. Effio)

No _____ Jump to Section 5.

Yes __x__ What percentage of your work is measurement or identification in water as opposed to other media? 10-20 %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? 100 %.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

Mount filter on microscope slide and dissolve filter with a dimethyl phthalate-diethyl oxalate solution and count as with air samples (NIOSH2).

4.1.1.1 What modifications have you made in these procedures?

None.

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No __x__

If yes, please describe?

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes __x__ No ____

If yes, please describe?

Microscope from England especially designed for counting.

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

From the literature and through American Pollution Control Association and American Chemical Society.

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No x____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: 2-3

4.1.2.2 Dollar Value: --

4.1.2.3 What is the source of funds for this work?

Industrial firms, consultants.

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

To continue to see how things develop.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

No research on asbestos fibres in water.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures? ______________________

4.2.1.3 On instrumentation? ______________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No _______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes _______ No _______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?____

4.2.5.2 On test procedures? ________________________________

4.2.5.3 On instrumentation? ________________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?____________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ______ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Transite

6.1 What procedures do you use?

X-ray diffraction

6.1.1 What modifications have you made in these procedures?

None.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

None.

8. What areas of research do you think deserve further work?

Development of an accurate automatic method of fibre measurement (Dr. Effio).

Interviewer: W.D. Brown

Date: 24 Nov. 80

Q-33

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Energie & Resources Québec
Address Inspection Minière, 2345 Dalton, Ste. Foy, Quebec G1W 3Y1
Telephone No. Quebec City: (418) 643-4453; Montreal (514) 873-7060
Name of Interviewee Réal Gagnon
Position Mine & Quarry Inspector
Industrial Hygiene

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   Chrysotile x
   Amosite
   Crocidolite
   Anthophylite
   Tremolite
   Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100_%.

3.1 What percentage of your work on air measurements is service work as opposed to research? _95_ %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _100_%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 25 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH P & CAM 239

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x_ No ____

If yes, what sort of information and from whom?

From U.S. literature only.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No _x_.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

____
____
____
____
____
____
____
____
____
____
____

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

____
____
____
____
____
____
____
____
____
____
____

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 12/Week

3.1.4.2 Dollar Value: --

3.1.4.3 What is the source of funds for this work?

Québec Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 5 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Work in asbestos fibre measurements will be taken over by a new organization called The Safety & Health Commission attached to Ministry of Labour for Administrative purposes. Ambient air will still be done by Environment Ministry.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

Nothing at present. Research has been stopped due to the formation of the new commission.

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: --

3.2.2.2 Dollar Value: --

3.2.2.3 What is the source of funds for this work?

--

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _x__ No _____

If yes, please describe.

New VC 25 high volume sampler from Germany.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None.

3.2.5.2 On test procedures?

None.

3.2.5.3 On instrumentation?

Have evaluated VC 25 high volume sampler from Germany.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

About one year.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

None.

3.2.7.1 On sampling?

None.

3.2.7.2 On test procedure?

None.

3.2.7.3 On instrumentation?

None.

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No _______

If yes, please describe.

____

____

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____

____

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes _______ No _______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

____

____

____

____

____

____

____

____

____

____

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __x__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Mines of Quebec.

8. What areas of research do you think deserve further work?

Identification of fibres having physiological effects.

Interviewer: W.D. Brown Date: 24/Nov./80

Q-34

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Services Protection de l'Environment de Quebec
Address Industrial Hygiene Branch
Telephone No. (514) 873-3874
Name of Interviewee Jean-Guy Bergeron
Position Industrial Hygienist

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass fibre and talc

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100%.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 50 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 90 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH 2

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No x

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

Through the literature and through QAMA

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes __x__ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Indirectly through QAMA

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

NIOSH 2

3.1.3.1 What modifications have you made in these procedures?

none

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

Through literature and QAMA

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No _x_

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

Only through QAMA

3.1.4. How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/~~Day~~ Week: 10 - 15

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

Provincial Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? _9_ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Changes in organization

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

no research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ________________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ______

4.2.5.2 On test procedures? ______

4.2.5.3 On instrumentation? ______

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ______

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes ____ NO x

If yes, on what materials and under what circumstances?

We take bulk samples

Bulk samples are sent to Energy and Resources Ministry

for measurement.

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

QAMA members
McGill University
Sherbrooke University
Government departments

8. What areas of research do you think deserve further work?

Development of an automatic direct-reading instrument.

Development of a simple method of identifying asbestos fibres.

Interviewer: W.D. Brown Date: November 10, 1980

Q-35

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Ecole Polytechnique
Address P.O. Box 6079, Station A, Montreal, Quebec H3C 3A7
Telephone No. (514) 344-4858
Name of Interviewee J.P. Monchalin
Position Research Scientist
Engineering Physics

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No x Jump to Section 4.

Yes ____ What percentage of your work is measurement or identification in air as opposed to other media? ____%.

Research on simulated samples at present time.

3.1 What percentage of your work on air measurements is service work as opposed to research? 0 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? ____%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No _____

If yes, please describe.

____
____
____
____
____
____
____
____
____
____

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

____
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____
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____
____
____
____
____

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ____________

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ____ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

100% research.

Yes x . Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

None.

3.2.1.2 On test procedures?

(1) Development of new mass-measuring technique: infrared absorption measured photoacoustically.

(2) Trying to understand photoacoustic technique in relation to large samples.

(3) Use of photoacoustic technique in establishing surface characteristics.

3.2.1.3 On instrumentation?

Development of photoacoustic technique - both hardware and software.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: 45

3.2.2.2 Dollar Value: $25,000-$30,000

3.2.2.3 What is the source of funds for this work?

NRC, Energy Mines & Resources, QAMA

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No x

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No x

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None.

3.2.5.2 On test procedures?

None.

3.2.5.3 On instrumentation?

None.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Two years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Continue with present contracts.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

As above.

3.2.7.3 On instrumentation?

As above.

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ____________________

4.2.5.2 On test procedures? ____________________

4.2.5.3 On instrumentation? ____________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ____________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ______ No __x__

If yes, on what samples and under what circumstances?

______

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes ____ NO x

If yes, on what materials and under what circumstances?

Results of our research projects could be useful for identification in bulk samples.

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

McGill - Dr. Rowlands
Sherbrooke - M. Cossette
Sherbrooke - Dr. Kimmerle
Ministry of Natural Resources, Quebec.

8. What areas of research do you think deserve further work?

Investigate new automatic techniques for fibre measurement and identification.

Non-destructive technique for measuring fibres in insulation.

Physiological mechanism of cancers caused by fibres.

Interviewer: W.D. Brown Date: 24/11/80

Q-36

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company McGill University, Institute of Occupational Health and Safety
Address 426 Des Moulins Mont St. Hilaire, J3G 4S6
Telephone No. (514) 467-6116
Name of Interviewee Michael Ross
Position Research Assistant in EM
Dr. Neil Rowlands (514) 467-2102

1. Is work being done there on fibre measurement or identification?
   No ___ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ___
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite x
      Crocidolite x
      Anthophylite x
      Tremolite x
      Actinolite x
   2.2 Other fibres? Yes x No ___

2.2.1 If yes, what kinds of fibres?

glass, microglass fibres, mineral wool

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _×_ What percentage of your work is measurement or identification in air as opposed to other media? ____%.

3.1 What percentage of your work on air measurements is service work as opposed to research? 40 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 60 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH 2 for optical work

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any ~~new~~ specialty instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x_ No ____

If yes, what sort of information and from whom?

Sebastien method of sampling from France

Connecticut Low Volume sampling

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No _x_.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

Sampling:
ambient sampling

Connecticut low volume for EM
(1 Sample total dust (usually low vol. method, for EM)
(1 personal sample in non working environment (for optical)

3.1.3.1 What modifications have you made in these procedures?

None

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

Sebastien method from France.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No _×_

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

Answered by
Dr. N. Rowlands

Dr. Patrick Sebastien, of Govt. of France.
Dr. F.D. Pooley, Univ. College, Cardiff, Dept. of Mineral Exploration
Dr. A. Langer, Mt. Sinai Hospital, New York.
Dr. Bob Stevens, EPA at Triangle Park, S.C.
Dr. Jean LeGuen, Health and Safety Executive, Govt. of U. K.
Dr. Bjorn Gylseth, Govt. of Norway.

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: 12/ week

3.1.4.2 Dollar Value: ________

3.1.4.3 What is the source of funds for this work?

School boards, municipal governments, unions, federal govt., QAMA.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? _5_ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

No plans at present - in the process of hiring a new director for the Institute. He will decide on the direction the Institute is to take.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

Quebec Ministry of Energy and Resources Project:

This is a two- phase project

Phase I: Characterization and size distribution of 17 mineral fibres (both natural and synthetic).

Phase 2: Done at Sherbrooke - attempting to produce growths using the 17 mineral fibres (in vivo).

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

Attempting to develop an instrument to separate fibres according to length and diameter. This is part of Phase 2.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 ~~Man-hours/week~~: 1 man-year

3.2.2.2 Dollar Value: $90,000 - 100,000

3.2.2.3 What is the source of funds for this work?

Govt. of Quebec.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes ____ No _x_

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _x_ No ____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

answered by
Dr. N. Rowlands

Dr. Patrick Sebastien, Govt. of France - DASS, Paris
Dr. F.D. Pooley, Univ. College, Cardiff, Dept. of Mineral Exploration
Dr. A. Langer, Mount Sinai Hospital, New York. Environ. Medicine Lab.
Dr. Bob Stevens, EPA Triangle Park, S.C.
Dr. Jean LeGuen, Health and Safety Executive, Govt. of U.K.
Dr. Bjorn Gylseth, Govt. of Norway.

For participation of Dr. Gibbs, former director of the Institute of Occupational Health and Safety, see the notes in the Appendix.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

answered by
Dr. N. Rowlands

- Ambient air analysis in areas of Thetford Mines and Black Lake Quebec.
- Ambient air analysis in areas of asbestos mills in Connecticut. These were research contracts in which equipment and techniques were evaluated.

3.2.5.2 On test procedures?

Evaluating asbestos counting procedures.

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

5 years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

This will depend on the new director.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No ____ Jump to Section 5.

Yes x What percentage of your work is measurement or identification in water as opposed to other media? 1-2 %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? 100 %.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

Method developed by Eric Chatfield.

4.1.1.1 What modifications have you made in these procedures?

We use an ultrasonifier to break up bundles.

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No __x__

If yes, please describe? ____

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No __x__

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

A. Langer in New York

EPA

answered by

Dr. N. Rowlands

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

answered by Dr. Rowlands

Dr. Rowlands is a member of Quebec - France committee on environmental concerns" "ACFAS". He is also involved with the World Health Organization IARC Conference on the Biological Effects of Asbestos and Related Mineral Fibres.

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: very low

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

Depends on new director

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

None is done

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes X No

If yes, on what samples and under what circumstances?

Some has been done on lung tissue for autopsies.

5.1 What procedures are you using on biological samples?

Answered by Dr. Rowlands

TEM, STEM, EDS & SAED

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO

If yes, on what materials and under what circumstances?

Bulk - insulation under contract

6.1 What procedures do you use?

EM procedures

X-ray emission analysis (EDAX)

X-ray diffraction (selected area diffraction patterns)

6.1.1 What modifications have you made in these procedures?

None

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

nswered by
r. Rowlands

Dr. J.C. Meranger, Dept. of Health and Welfare Canada

Interviewer: W.D. Brown Date: November 5, 1980

8. What areas of research do you think deserve further work?

(Directed to Dr. Neil Rowlands of McGill:)

- Use of EM: the use of fast methods of calculating mass distribution, fibre size distribution and mineralogical composition on a quantitative and semi-quantitative basis.
- Use and evaluation of energy dispersive methods (EDS) and a much more quantitative analysis of results obtained by the method.
- Fibre counting: use and evaluation of image analysis systems for counting and sizing, including use in combination with EM.
- Standardization of counting procedures.
- Use of Scanning TEM in combination with EDS as a total system.
- Microdiffraction techniques for structural or crystallographic identification.

Interviewer: W.D. Brown Date: 19/11/80

8. What areas of research do you think deserve further work?

(Directed to Dr. Neil Rowlands of McGill:)

- Use of EM: the use of fast methods of calculating mass distribution, fibre size distribution and mineralogical composition on a quantitative and semi-quantitative basis.

- Use and evaluation of energy dispersive methods (EDS) and a much more quantitative analysis of results obtained by the method.

- Fibre counting: use and evaluation of image analysis systems for counting and sizing, including use in combination with EM.

- Standardization of counting procedures.

- Use of Scanning TEM in combination with EDS as a total system.

- Microdiffraction techniques for structural or crystallographic identification.

Interviewer: W.D. Brown Date: 19/11/80

APPENDIX

NOTES

Dr. Gibbs, - former director of McGill's Institute of Occupational Health and Safety, was active in the following international organizations.

- National Academy of Sciences (U.S.)
- Canada EEC ASBESTOS Sub-group
- Asbestos International Association (AIA)
- World Health Organization IARC
  Conference on the Biological Effects of Asbestos and Related Mineral Fibres.

Q-37

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Sherbrooke University
Address Sherbrooke, Quebec
Telephone No. (819) 565-3617
Name of Interviewee Dr. F.M. Kimmerle
Position Professor of Chemistry

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2. Research Only: Section 3.2

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes ____ No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No ____

2.2.1 If yes, what kinds of fibres?

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(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

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3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes ___ What percentage of your work is measurement or identification in air as opposed to other media? ____%.

3.1 What percentage of your work on air measurements is service work as opposed to research? _______%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? ______%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No _____

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

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3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

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3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ____________

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ____ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

100% Research.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

Comparison of spectrophotometric optical and EM measurements of fibres on nuclepore membranes using chrysotile and non-fibrous serpentine.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: 63

3.2.2.2 Dollar Value: $15,000/year

3.2.2.3 What is the source of funds for this work?

Work is done by graduate student and ½ of the time of a technician.

Source of Funds: NRC grant
Quebec Ministry of Education

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No x_____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x_____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

From the literature only.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None

3.2.5.2 On test procedures?

None

3.2.5.3 On instrumentation?

None

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Five months.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Continuation of present program.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

As above.

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ________________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No ____ Please explain.

100% Research.

Yes x Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling?

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

The study in progress would apply to both air and water samples. See Section 3.2.

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______________________

4.2.7.2 On test procedure? ______________________

4.2.7.3 On instrumentation? ______________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO x

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Dr. Gibbs and Rowlands at McGill.

Dr. Gibbs has done important work in the past on the exposure of individuals and groups to various fibres.

8. What areas of research do you think deserve further work?

- Definition and control of fibres are such they render measurement difficult. Legal definition of fibres is required which can result in easy identification.

- Methods should be investigated which will readily distinguish between natural fibres and those which have been altered in processing, i.e. chemical information as opposed to merely physical information in fibre identification, e.g. chrysotile fibres in brake linings, which are altered during processing.

Interviewer: W.D. Brown Date: 27 November 80

G-3E

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Sherbrooke University
Address Sherbrooke, Quebec
Telephone No. (819) 565-2031
Name of Interviewee France Bessette
Position Assistant Professor, Medical Faculty

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes X Continue with 2. Research only - see Section 3.2

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes ____ No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No ____

2.2.1 If yes, what kinds of fibres?

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(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

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3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes ___ What percentage of your work is measurement or identification in air as opposed to other media? ____%.

3.1 What percentage of your work on air measurements is service work as opposed to research? ________%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _______%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No _____

If yes, please describe.

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3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

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3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

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3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ________________

3.1.4.2 Dollar Value: ________________

3.1.4.3 What is the source of funds for this work?

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3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ____ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Research only

Yes X. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

Fibre measurements using small-angle light scattering. Advantage over other light scattering methods is that it can be done over a large area, on a concentrated sample. and on a wide range of fibre sizes. Eventually the instrument will measure the fibre size distribution. It is hoped that it will be useable for continuous monitoring in its final form.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: 40

3.2.2.2 Dollar Value: $23,000.00 over 2 years

3.2.2.3 What is the source of funds for this work?

Contract with the Ministry of Energy & Resources, Quebec.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes X No _____

If yes, please describe.

Most of the optical components came from U.S.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

An exchange is being arranged with government, para-government and university people in France through PRAUS (Projet de Recherche sur l'Amiente de University Sherbrooke.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

Present project commenced end of September 1979.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Since September 1979.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

To continue with present project until possibly the end of 1982.

4. Are you measuring or identifying asbestos fibres in water?

No x____ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

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4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

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Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ________________________

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4.2.1.2 On test procedures? ______________________________

4.2.1.3 On instrumentation? ______________________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No _______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes _______ No _______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No X

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __X__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Dr. Lalancette - a Director of SNA

Dr. Kimmerle - Sherbrooke

Dr. Donnigan - IRDA contact through Sherbrooke

8. What areas of research do you think deserve further work?

Development of better air filters for personal sampling and static air sampling.

Fast way of fibre length and length distribution.

Interviewer: W. D. Brown Date: 26/11/80

Q-39

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Asbestos Corporation
Address Thetford Mines, Quebec
Telephone No. (418) 335-9171 (Ext. 8314)
Name of Interviewee Mr. Denis Dion
Position Supervisor, Environmental Control

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

____

____

____

____

____

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

____

____

____

____

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100%_.

3.1 What percentage of your work on air measurements is service work as opposed to research? _100_%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _100_%

This includes stack sampling.

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 80 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH2

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes ____ No _x_

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes ____ No _x_

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

From NIOSH only.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No x .

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 3000 - 4000/Year

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

The Company.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 8-9 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

May change to AIA method.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No x Jump to Section 5.

Yes ____ What percentage of your work is measurement or identification in water as opposed to other media? ____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research?

____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ________________

4.2.1.2 On test procedures? ______________________

4.2.1.3 On instrumentation? ______________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

____
____
____
____
____
____
____
____
____
____

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

____
____
____
____
____
____
____
____
____
____

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?________________________________

4.2.5.2 On test procedures? ________________________

4.2.5.3 On instrumentation? ________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?____________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __x__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

All the Quebec Asbestos companies.

8. What areas of research do you think deserve further work?

Development of fast reliable method of counting to reduce human error.

Interviewer: W.D. Brown

Date: 21 Nov. 80

Q-40

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Carey Canada Inc.
Address P.O. Box 190, East Broughton Station, Quebec
Telephone No. (418) 426-3050
Name of Interviewee Ian Harding
Position Environment Technologist

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 95 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 10-20%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH2

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No x____

If yes, please describe.

3.1.2.3 Have you imported any specialty instruments or attachments for use on air from the work place? Yes x__ No ____

If yes, please describe.

Ambient particle monitor, from GCA in U.S. Measures gravimetrically the respirable dust in the air.

RDM (Respirable Dust Monitor)

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No

If yes, what sort of information and from whom?

Just what is in the literature.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes No x.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No work on ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Week: 20-25

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Company

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 4-5 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Trend is toward more personnel sampling with classifications according to occupation rather than location as in past.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research is done.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes x What percentage of your work is measurement or identification in water as opposed to other media? 5 %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? 100 %.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

Gravimetric methods for total undissolved solids

Do microscopic examination for fibres, which are classified as follows:

(1) positively not chrysotile

(2) possibly chrysotile

(3) positively chrysotile

4.1.1.1 What modifications have you made in these procedures?

This is not standard procedure.

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _x_

If yes, please describe?

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No _x_

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes _x_ No ____

If yes, what sort of information and from whom?

Only from the literature.

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No __x__

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: __2__

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

The Company.

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

To continue in present manner.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

No research.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO x

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Joe Chamberland	Lake Asbestos
Yvon Lacheveque	Johns Manville
Clement Paré	Bell Asbestos
	Cassiar

8. What areas of research do you think deserve further work?

Develop an instrument for rapid determination of fibre concentrations in air.

Interviewer: W.D. Brown Date: 6/11/80

Q-41

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Johns-Manville Canada
Address P.O. Box 1500, Asbestos, Quebec J1T 3N2
Telephone No. (819) 879-5431 (Ext. 217)
Name of Interviewee Yvon l'Archevêque
Position Senior Industrial Hygienist

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite x Very small amount
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

Glass fibres occasionally.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? >90 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 95 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 80%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH P & CAM 239

Stack sampling and analysis = Regulatory Code and Protocol Report EPS 1-EP75-1 of Fisheries and Environment Canada, Environment Protection Services.

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No _x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x_ No ____

If yes, what sort of information and from whom?

Most information obtained from abroad comes through OAMA.

- Obtained some information from EINRS (Paris) and LNE (Paris) (EINRS = 30 Rue Olivier - Noyer 75680 Paris Cedex 14; Tel. 545-6767).

Information on sampling techniques and analytical techniques learned at EINRS and LNE. Was in Europe for 22 days in 1976.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _x_ No ____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Participating in round-robin proficiency tests with Johns-Manville Laboratories internationally.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

NIOSH P & CAM 239, running samples for a minimum of 7 hours.

3.1.3.1 What modifications have you made in these procedures?

None.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No __x__.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

Only from the literature and through OAMA.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No __x__

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 2,500/year

3.1.4.2 Dollar Value: --

3.1.4.3 What is the source of funds for this work?

The Company.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? __30__ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To convert to the AIA method and do more respirable dust sampling (recommendation of Beaudry Commission of Quebec).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No ____. Please explain.

Yes x . Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

We occasionally participate in task forces on sizing and monitoring.

3.2.1.3 On instrumentation?

We occasionally evaluate new instruments - mostly for OAMA.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 1 man-month per year

3.2.2.2 Dollar Value: --

3.2.2.3 What is the source of funds for this work?

The Company.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No x

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

From the literature in journals - mainly U.S.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None.

3.2.5.2 On test procedures?

None.

3.2.5.3 On instrumentation?

Occasionally evaluate new instruments, such as microscopes.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

About 30 years, in a small way.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

None, but will participate in any studies initiated by the Company or by outside agencies such as OAMA.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5. See Below.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research?

_____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

Sampling only - samples were send to Ontario Research Foundation for analysis.

4.1.1.1 What modifications have you made in these procedures?

None.

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

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4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

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4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

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4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No _______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes _______ No _______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ____________________

4.2.5.2 On test procedures? ____________________

4.2.5.3 On instrumentation? ____________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ____________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? _____

4.2.7.2 On test procedure? _____

4.2.7.3 On instrumentation? _____

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO

If yes, on what materials and under what circumstances?

Occasionally have looked at such bulk materials as asbestos cement.

6.1 What procedures do you use?

Optical microscopy.

6.1.1 What modifications have you made in these procedures?

None.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

All member companies of QAMA

~~Quebec Environment Ministry (Jean Leverne, Quebec City)~~

Quebec Environment Ministry (Jean-Guy Berjeron, Montreal)

Fisheries and Environment Canada (Bob MacKay and Mike Bumbaco)

8. What areas of research do you think deserve further work?

- Medical agreement on sizing of fibres based on physiological effects.
- More work should be done on the physiological effects of fibres generally, including organic textile fibres.
- Should establish an international standard for fibres in ambient air and water.

Interviewer: W.D. Brown

Date: 26 Nov. 80

Q-42

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Lac d'Amiante du Quebec
Address Black Lake, Quebec, GON 1A0
Telephone No. (418) 423-4221
Name of Interviewee Robert Gale
Position Superintendent, Mill Engineering and Environmental Control

1. Is work being done there on fibre measurement or identification?
   - No ____ Terminate interview.
   - Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   - 2.1 Asbestos? Yes x No ____
   - 2.1.1 If yes, what kinds of asbestos?
     - Chrysotile x
     - Amosite
     - Crocidolite
     - Anthophylite
     - Tremolite
     - Actinolite
   - 2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100_%.

3.1 What percentage of your work on air measurements is service work as opposed to research? _100_%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _100_%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 15 %.
Personnel sampling is being increased.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

1. NIOSH - membrane method.
2. Do gravimetric sampling parallel with the NIOSH method, using an RDM 101-4 (automatic gravimetric sampler) built by GCA.
3. Monitoring return air with an APM (ambient particulate monitor) also by GCA.
4. Tyndalometer used for finding dust sources (Leitz)

3.1.2.1 What modifications have you made in these procedures?

Acetone mounting is now used in place of phthalate, which was used previously.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

Tyndalometer from Germany - sold by Leitz Canada

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

Through AIA

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No x.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Only exchanges that have been made are through QAMA.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 ~~Samples/Day~~ Samples/year 2000-3000 on routine basis

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

Company

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 6 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To increase personnel sampling

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

no research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __×__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? __5__%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research?

__0__%. Research only

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

We are attempting to develop a method without use of EM

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _x___

If yes, please describe?

Not as yet.

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No _x___

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _x___

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No x

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: 0

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

To develop and perfect a method other than EM.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes _x_ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling?

None

4.2.1.2 On test procedures?

Development of a new method which does not require EM.

4.2.1.3 On instrumentation?

Development of new instrumentation other than EM.

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week: 8

4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

The Company

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No x

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No x

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

QAMA has done work, but we have done none ourselves.

4.2.5.2 On test procedures?

QAMA has done work, but we have done none.

4.2.5.3 On instrumentation?

QAMA has done work, but we have done none.

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

1½ years.

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

Continue with development of method.

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes ____ NO __×__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

- All mining companies in Quebec.
- Ministry of Natural Resources
- Environment Ministry - Raynald Brulotte

8. What areas of research do you think deserve further work?

(1) Standardization of methods and counters on a frequent basis.

(2) Automatic counter, specially for stacks.
e.g. Tyndalometer (Leitz).

Interviewer: W.D. Brown Date: November 5, 1980

Q-43

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Les Mines d'Amiante Bell Limitée
Address P.O. Box 99, Thetford Mines, Quebec
Telephone No. (418) 338-3766
Name of Interviewee Clément Paré
Position ______

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100_%.

3.1 What percentage of your work on air measurements is service work as opposed to research? _100_ %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _100_ %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 75 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH2

3.1.2.1 What modifications have you made in these procedures?

Tried a new filter of 25 mm diameter for AIA method. May change completely to AIA method.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

From literature.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No __x__.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

None

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Week 100

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Company.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 8 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Plan to change to AIA Method if possible - if able to co-relate with NIOSH2 method.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

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3.2.5.2 On test procedures?

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3.2.5.3 On instrumentation?

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3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

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3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes x What percentage of your work is measurement or identification in water as opposed to other media? <1 %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? 0 %.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

Have done some sampling and sent samples to McGill for testing.

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ________________________________

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4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

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4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

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____

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4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO _x___

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Other asbestos mining companies in Quebec.

8. What areas of research do you think deserve further work?

Would like an instrument developed similar to the FAM which would take readings over a shorter time span.

Interviewer: W.D. Brown Date: 6/11/80

Q-44

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Dalhousie University
Address Dept. of Physics, Halifax, N.S.
Telephone No. (901), 424-7062
Name of Interviewee Dr. Stroink
Position Professor of Physics

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite Research only: See Section 3.2, on Page 9.
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

____

____

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____

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

____

____

____

____

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes ___ What percentage of your work is measurement or identification in air as opposed to other media? ____%.

3.1 What percentage of your work on air measurements is service work as opposed to research? ________%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _______%

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No _____

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ____________

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ____ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

All research.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

- We are magnetizing asbestos samples and measuring remnant field by means of a magnetometer. We thus are able to obtain a ratio between total fibres in milligrams and the magnetic field. We would like to relate this to actual numbers of fibres but do not have the counting equipment.

- We are also analysing asbestos type by means of the Mossbauer effect. IUCC standard samples were used. We have measured fibres in lung tissue using the method.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 3 man-years/year

3.2.2.2 Dollar Value: $30,000/year

3.2.2.3 What is the source of funds for this work?

NSERC - Federal Government

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes x No _____

If yes, please describe.

Power supply for magnet ($20,000)

and other components ($10,000).

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Technical journals and contacts with Dr. Timbrell in Britain.

Also through international conferences (European Physical Society).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

- Started just three years ago on the program.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Three years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

Looking more into magnetic properties of asbestos, and fibre measurements using these properties.

4. Are you measuring or identifying asbestos fibres in water?

No _x_ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

____

____

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____

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

____

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____

____

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ________________________________

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4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ____________________

4.2.5.2 On test procedures? ____________________

4.2.5.3 On instrumentation? ____________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ____________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____

4.2.7.2 On test procedure? ____

4.2.7.3 On instrumentation? ____

5. Have you done any asbestos fibre identification in biological samples?

Yes x No ____

If yes, on what samples and under what circumstances?

The magnetometer method and the Mossbauer spectrometer have both been tried for this purpose.

5.1 What procedures are you using on biological samples?

As explained in Section 3.2.1.3.

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Tried the Mossbauer effect on insulations using the Mossbauer Spectrometer, but no relevant data could be obtained by this method.

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Ontario Research Foundation, McGill, Laval

Dr. Janigan at Victoria Hospital in Halifax is counting fibres in samples of lung tissue, to relate incidents of fibre in lung tissue to geographical location. Samples are from lungs of the general population, not just those who have died of respiratory diseases.

8. What areas of research do you think deserve further work?

More work needs to be done in occupational health, e.g. what happens to asbestos when it gets into the lung?

Interviewer: W.D. Brown

Date: December 2, 1980

Q-45

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Government of Newfoundland
Address Dept. of Labour and Manpower
Telephone No. 737-2644 / Beothuck Bldg. Crosbie Place, St. Johns, Newfoundland
AIC 5T7
Name of Interviewee Gerald Wood
Position Senior Occupational Hygienist

1. Is work being done there on fibre measurement or identification?
   No _____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   - Chrysotile x
   - Amosite
   - Crocidolite
   - Anthophylite
   - Tremolite
   - Actinolite

   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 90 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? >99 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 90 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

ACGIH of the joint AIHA/ACGIH
Aerosol Hazard Evaluation Committee

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No x

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No __x__

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes __x__ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

With members of the joint AIHA/ACGIH Committee

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

C115 pumps run for 18 hours

3.1.3.1 What modifications have you made in these procedures?

none

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

Future: Budgeting for a GC-8 fibre counter.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

Only from British and U.S. literature.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No _x_

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/~~Day~~ Month: 90/month

3.1.4.2 Dollar Value: ________

3.1.4.3 What is the source of funds for this work?

Provincial Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? _6_ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Concentrate on other geographic areas :

Labrador needs more detailed examination.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

no research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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____
____

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

insulating materials

6.1 What procedures do you use?

Separating onto slide and identifying with
polarizing microscope and dispersion staining.

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Ed Stevens at Johns Manville
Real Bourdage - Dept. of Labour - Quebec

Interviewer: W.D. Brown **Date:** November 4, 1980